CLAIMS

1. A self locking apparatus comprising:

a housing;

a load initiating element located within the housing;

a spring located adjacent to the load initiating element, and configured to expand in compression against the housing; and

wherein the load initiating element and spring are slideable within the housing until the spring is loaded into a self locking mode.

2. The self locking apparatus of claim 1, wherein the housing is an outer tube.

3. The self locking apparatus of claim 2, wherein an inner tube is slideably positioned within the outer tube and is configured to be able to provide a compression force to the spring from a side opposite of the load initiating element.

4. The self locking apparatus of claim 3 further comprising:

a pin rigidly attached to the inner tube and slideably attached to the spring;

a piston slideably attached to the pin; and

wherein the piston is configured to position the load initiating element, spring and inner tube within the outer tube without loading the spring into a self locking mode.

5. The self locking apparatus of claim 3 further comprising:

a pin rigidly attached to the inner tube and slideably attached to the spring;

a mass element slideably attached to the pin and configured to provide sufficient inertial load in response to the inner tube being accelerated beyond a design threshold to load the spring into a self locking mode.

6. The self locking apparatus of claim 3 further comprising:

a pin rigidly attached to the inner tube and slideably attached to the spring;

a cylinder rigidly attached to the pin;

a second spring in operable communication between the cylinder and a rod; and

wherein the rod is configured to position the cylinder, second spring, load initiating element, spring and inner tube within the outer tube without loading the spring into a self locking mode.

7. The self locking apparatus of claim 1, wherein the spring is a wave spring.

8. The self locking apparatus of claim 1, wherein the spring is a conic spring.

9. The self locking apparatus of claim 8, wherein the conic spring is outwardly biased.

10. The self locking apparatus of claim 1, wherein the spring comprises:

an initiator spring; and

a plurality of additional springs.

11. The self locking apparatus of claim 10, wherein the plurality of additional springs comprise:

at least one intermediate load conic spring; and

at least one primary load conic spring.

12. The self locking apparatus of claim 3, wherein the inner tube is in operable communication with a motor vehicle bumper, and the outer tube is in operable communication with a motor vehicle body.

13. A self locking apparatus comprising:

an outer tube;

an inner tube located within the outer tube;

a load initiating element located within the outer tube and around a portion of the inner tube;

a spring located adjacent to the load initiating element and around a portion of the inner tube and configured to expand in compression against the inner tube; and

the load initiating element, spring and outer tube are slideable about the inner tube until the spring is loaded into a self locking mode.

14. The self locking apparatus of claim 13, wherein the outer tube is in operable communication with a motor vehicle bumper, and the inner tube is in operable communication with a motor vehicle body.

15. A self locking apparatus comprising:

an outer tube;

a cylindrical body, with a plurality of slotted surfaces forming a plurality of load transfer segments, and with a bottom annulus, the cylindrical body located within the outer tube;

a spring located adjacent to the bottom annulus and configured to expand in compression against the load transfer segments; and

the slotted cylindrical body and spring are slideable within the outer tube in the absence of the spring being loaded into a self locking mode.

16. The self locking apparatus of claim 15, wherein the outer tube is in operable communication with a motor vehicle body, and an inner tube, the inner tube configured to provide a compressive force to the spring, is in operable communication with a motor vehicle bumper.

17. The self locking apparatus of claim 15, wherein the annular surface is in the interior of the cylindrical body.

18. The self locking apparatus of claim 15, wherein the conic spring is outwardly biased.

19. A self locking apparatus comprising:

an inner tube;

a cylindrical body, with a plurality of slotted surfaces forming a plurality of load transfer segments, and with a bottom annulus, the cylindrical body located adjacent to an inner tube;

a spring located adjacent to the bottom annulus and configured to expand in compression against the load transfer segments; and

the inner tube is slideable with respect to the slotted cylindrical body and spring in the absence of the spring being loaded into a self locking mode.

20. The self locking apparatus of claim 19 further comprising:

an inner tube configured to receive the force provided by the load transfer segments, and the inner tube in operable communication with a motor vehicle body; and

wherein the outer tube is in operable communication with a motor vehicle bumper.

21. The self locking apparatus of claim 19, wherein the annular surface is on the exterior of the cylindrical body.

22. The self locking apparatus of claim 19, wherein the conic spring is inwardly biased.